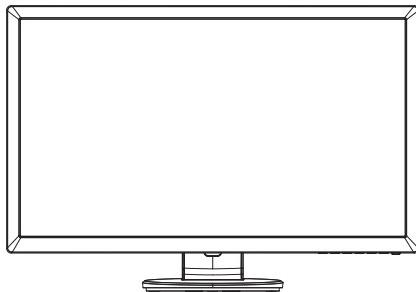


July 2010

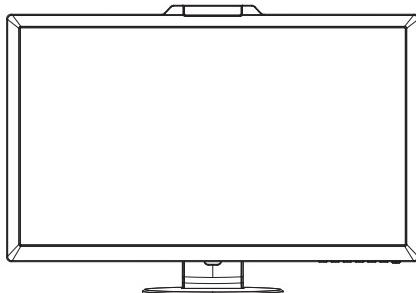


# VE278Q/VK278Q Series LED Monitor

## User Guide



VE278Q



VK278Q

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# Notices

## Federal Communications Commission Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



As an Energy Star® Partner, our company has determined that this product meets the Energy Star® guidelines for energy efficiency.

## Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

This class B digital apparatus complies with Canadian ICES-003.

## **Safety information**

- Before setting up the monitor, carefully read all the documentation that came with the package.
- To prevent fire or shock hazard, never expose the monitor to rain or moisture.
- Never try to open the monitor cabinet. The dangerous high voltages inside the monitor may result in serious physical injury.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- Slots and openings on the back or top of the cabinet are provided for ventilation. Do not block these slots. Never place this product near or over a radiator or heat source unless proper ventilation is provided.
- The monitor should be operated only from the type of power source indicated on the label. If you are not sure of the type of power supply to your home, consult your dealer or local power company.
- Use the appropriate power plug which complies with your local power standard.
- Do not overload power strips and extension cords. Overloading can result in fire or electric shock.
- Avoid dust, humidity, and temperature extremes. Do not place the monitor in any area where it may become wet. Place the monitor on a stable surface.
- Unplug the unit during a lightning storm or if it will not be used for a long period of time. This will protect the monitor from damage due to power surges.
- Never push objects or spill liquid of any kind into the slots on the monitor cabinet.
- To ensure satisfactory operation, use the monitor only with UL listed computers which have appropriate configured receptacles marked between 100-240V AC.
- If you encounter technical problems with the monitor, contact a qualified service technician or your retailer.

## Care & Cleaning

- Before you lift or reposition your monitor, it is better to disconnect the cables and power cord. Follow the correct lifting techniques when positioning the monitor. When lifting or carrying the monitor, grasp the edges of the monitor. Do not lift the display by the stand or the cord.
- Cleaning. Turn your monitor off and unplug the power cord. Clean the monitor surface with a lint-free, non-abrasive cloth. Stubborn stains may be removed with a cloth dampened with mild cleaner.
- Avoid using a cleaner containing alcohol or acetone. Use a cleaner intended for use with the LED. Never spray cleaner directly on the screen, as it may drip inside the monitor and cause an electric shock.

### The following symptoms are normal with the monitor:

- The screen may flicker during the initial use due to the nature of the fluorescent light. Turn off the Power Switch and turn it on again to make sure that the flicker disappears.
- You may find slightly uneven brightness on the screen depending on the desktop pattern you use.
- When the same image is displayed for hours, an afterimage of the previous screen may remain after switching the image. The screen will recover slowly or you can turn off the Power Switch for hours.
- When the screen becomes black or flashes, or cannot work anymore, contact your dealer or service center to fix it. Do not repair the screen by yourself!

### Conventions used in this guide



**WARNING:** Information to prevent injury to yourself when trying to complete a task.



**CAUTION:** Information to prevent damage to the components when trying to complete a task.



**IMPORTANT:** Information that you **MUST** follow to complete a task.



**NOTE:** Tips and additional information to aid in completing a task.

## **Where to find more information**

Refer to the following sources for additional information and for product and software updates.

### **1. ASUS websites**

The ASUS websites worldwide provide updated information on ASUS hardware and software products. Refer to <http://www.asus.com>

### **2. Optional documentation**

Your product package may include optional documentation that may have been added by your dealer. These documents are not part of the standard package.

## **1.1 Welcome!**

Thank you for purchasing the ASUS® VE278Q/VK278Q Series LED monitor!

The latest widescreen LED monitor from ASUS provides a crisper, broader, and brighter display, plus a host of features that enhance your viewing experience.

With these features, you can enjoy the convenience and delightful visual experience that the VE278Q/VK278Q Series brings you!

## **1.2 Package contents**

Check your VE278Q/VK278Q Series LED monitor package for the following items:

- ✓ LED monitor
- ✓ Monitor base
- ✓ 1 x CD (Only available for model VK278Q)
- ✓ Quick start guide
- ✓ Warranty card
- ✓ 1 x Power cord
- ✓ 1 x VGA cable
- ✓ 1 x WebCam USB cable (Only available for model VK278Q)
- ✓ 1 x DVI cable
- ✓ 1 x Audio cable



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If any of the above items is damaged or missing, contact your retailer immediately.

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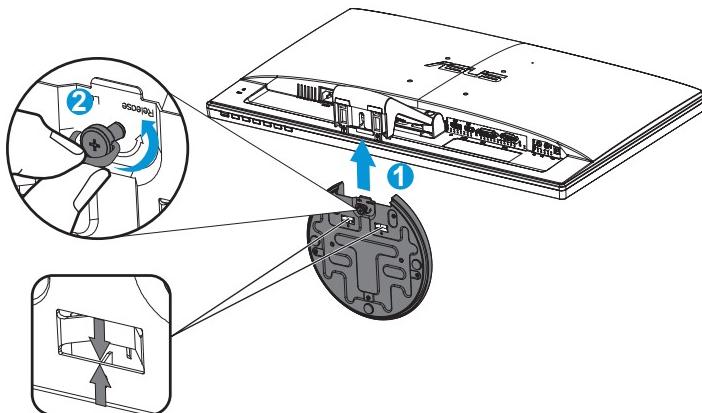
## 1.3 Assembling the monitor base

### To assemble the monitor base:

1. Attach the base to the arm and fix with the screw to join them tightly. You can easily tighten the screw by fingers.
2. Adjust the monitor to the angle that is most comfortable for you.



We recommend that you cover the table surface with soft cloth to prevent damage to the monitor.

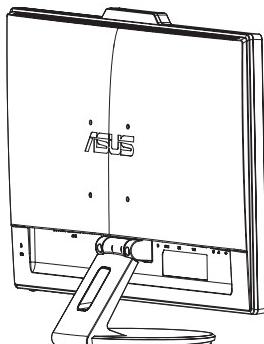


Make sure to screw the base to the arm tightly.

## 1.4 Connect cables

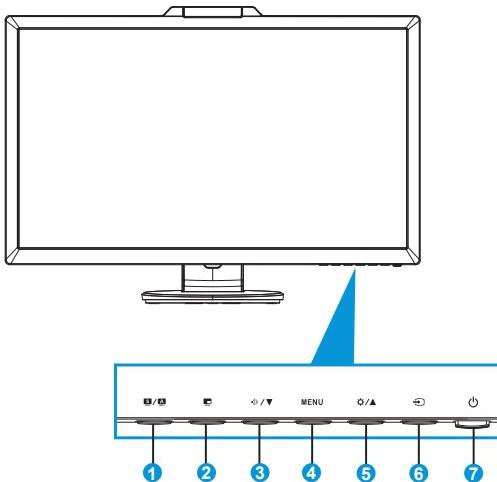
### To connect cables:

Connect the cables you need based on chapter 1.5.2, page1-5.



## 1.5 Monitor introduction

### 1.5.1 Front of the LED monitor



#### 1. / Button:

- Automatically adjust the image to its optimized position, clock, and phase by long pressing this button for 2-4 seconds (for VGA mode only).
- Use this hot key to switch from six video preset modes (Scenery Mode, Standard Mode, Theater Mode, Game Mode, Night View Mode, and sRGB Mode) with SPLENDID™ Video Enhancement Technology.
- Exit the OSD menu or go back to the previous menu as the OSD menu is active.

#### 2. Button:

- Press this button to activate the Picture-in-picture function.
- Both the DVI and HDMI input source should not be selected as both the Main and PIP source simultaneously.

#### 3. / Button:

- Press this button to decrease the value of the function selected or move to the next function.
- This is also a hot key for Volume adjustment.

#### 4. MENU Button:

- Press this button to enter the OSD menu.
- Press this button to enter/select the icon (function) highlighted while the OSD is activated.

5.  /  Button:
  - Press this button to increase the value of the function selected or move right/up to the next function.
  - This is also a hot key for Brightness adjustment.
6.  Input Select Button:
  - Use this hot key to switch from VGA, DVI, HDMI and DisplayPort input signal.

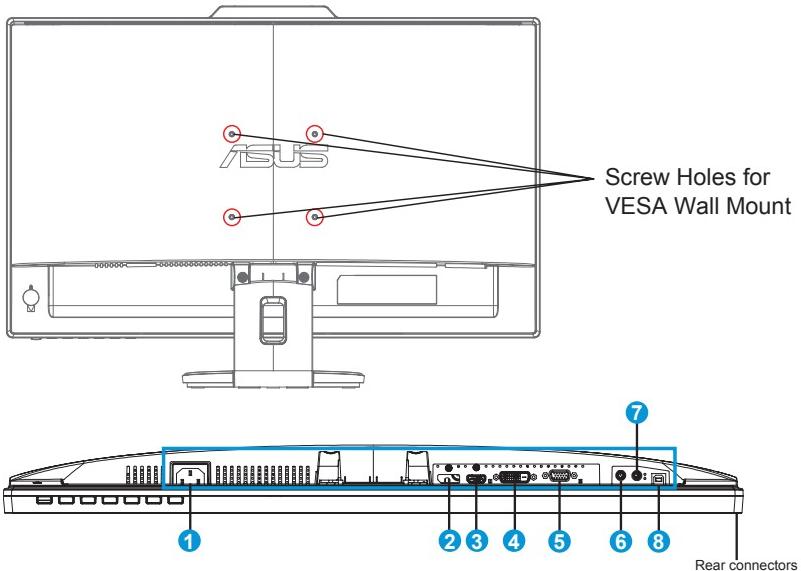


Press  (Input Select button) to display HDMI signals after you connect HDMI cable with the monitor.

7.  Power Button/Power Indicator:
  - Press this button to turn the monitor on/off.
  - The color definition of the power indicator is as the below table.

| Status | Description  |
|--------|--------------|
| Blue   | ON           |
| Amber  | Standby mode |
| OFF    | OFF          |

## 1.5.2 Rear of the LED monitor



|   |   |
|---|---|
| 1 | AC-IN port                                    |
| 2 | DisplayPort                                   |
| 3 | HDMI-IN port                                  |
| 4 | DVI port                                      |
| 5 | VGA port                                      |
| 6 | Audio Line-in port                            |
| 7 | Earphone-out port                             |
| 8 | USB-IN port (Only available for model VK278Q) |

## 2.1 Detaching the arm/stand (for VESA wall mount)

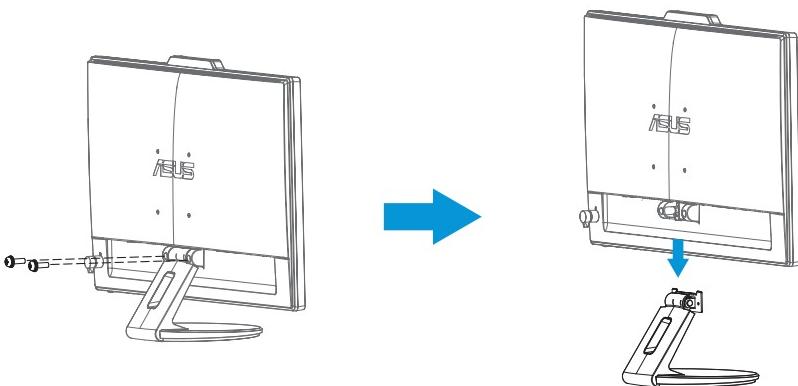
The detachable stand of the VE278Q/VK278Q Series LED monitor is specially designed for VESA wall mount.

### To detach the arm/stand:

1. Disconnect power and signal cables. Carefully put the front of the monitor face down on a clean table.
2. Use a screwdriver to remove the two screws that secure the stand to the monitor.
3. Detach the stand from the monitor.



- We recommend that you cover the table surface with soft cloth to prevent damage to the monitor.
- Hold the stand of the monitor while removing the screws.

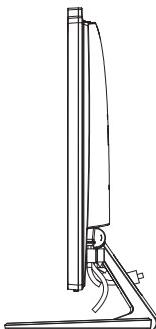


- The VESA wall mount kit ( 100 x 100 mm) is purchased separately.
- Use only the UL Listed Wall Mount Bracket with minimum weight/load 22.8 Kg (Screw size: 4 x 12 mm).

## 2.2 Adjusting the monitor

- For optimal viewing, we recommend that you look at the full face of the monitor, then adjust the monitor to the angle that is most comfortable for you.
- Hold the stand to prevent the monitor from falling while changing its angle.
- You can adjust the monitor's angle from -5° to 20°.

-5° ~ 20°  

## 2.3 Install LifeFrame 2 software

ASUS VK278Q series provides the easy-to-use **LifeFrame 2** software that can work with the webcam, allowing users to create their own photos or video clips.



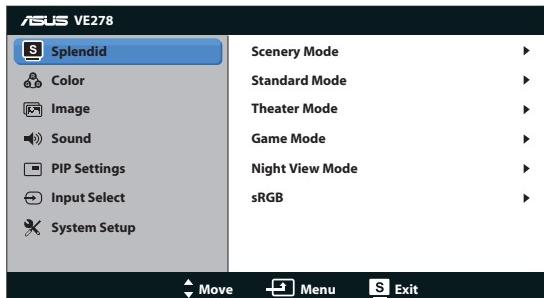
- The **LifeFrame 2** software currently supports Microsoft® Windows® 7/Vista/XP Service Pack 2 operating systems.
- The **LifeFrame 2** software is bundled in the support CD.

## Installation instructions

1. Close all other applications.
2. Insert the support CD into the optical drive and run the **LifeFrame 2** program.
3. Follow the on-screen instructions to complete the installation.

## 3.1 OSD (On-Screen Display) menu

### 3.1.1 How to reconfigure

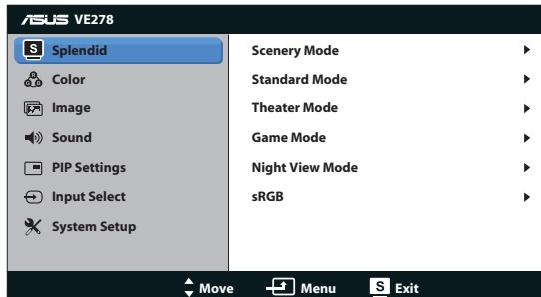


1. Press the MENU button to activate the OSD menu.
2. Press ▼ and ▲ to navigate through the functions. Highlight and activate the desired function by pressing the MENU button. If the function selected has a sub-menu, press ▼ and ▲ again to navigate through the sub-menu functions. Highlight and activate the desired sub-menu function by pressing the MENU button.
3. Press ▼ and ▲ to change the settings of the selected function.
4. To exit the OSD menu, press the S button. Repeat step 2 and step 3 to adjust any other function.

### 3.1.2 OSD Function Introduction

#### 1. Splendid

This function contains six sub-functions that you can select for your preference. Each mode has the Reset selection, allowing you to maintain your setting or return to the preset mode.



- **Scenery Mode:** This is the best choice for scenery photo displaying with SPLENDID™ Video Enhancement.

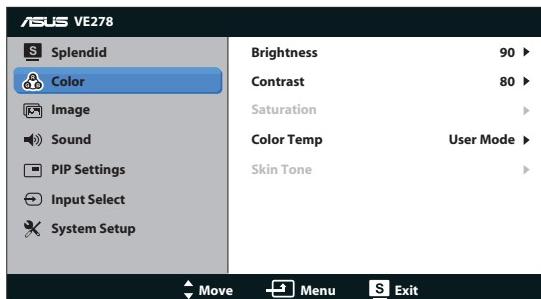
- **Standard Mode:** This is the best choice for document editing with SPLENDID™ Video Enhancement.
- **Theater Mode:** This is the best choice for movie watching with SPLENDID™ Video Enhancement.
- **Game Mode:** This is the best choice for game playing with SPLENDID™ Video Enhancement.
- **Night View Mode:** This is the best choice for playing dark-scene game or watching movie with SPLENDID™ Video Enhancement.



- In the **Standard Mode** and **sRGB**, the **Saturation**, **Color Temp.**, **Skin Tone**, **Sharpness**, and **ASCR** functions are not user-configurable.

## 2. Color

Select the image color you like from this function.



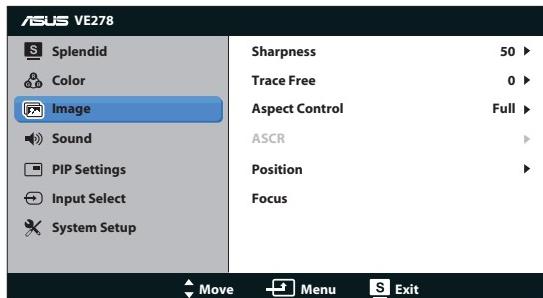
- **Brightness:** The adjusting range is from 0 to 100. The ☀ button is also a hot key to activate this function.
- **Contrast:** The adjusting range is from 0 to 100.
- **Saturation:** The adjusting range is from 0 to 100.
- **Color Temp.:** Contains three preset color modes (Cool, Normal, Warm) and one User Mode.
- **Skin Tone:** Contains three color modes including Reddish, Natural, and Yellowish.



In the User Mode, colors of R (Red), G (Green), and B (Blue) are userconfigurable; the adjusting range is from 0 ~ 100.

### 3. Image

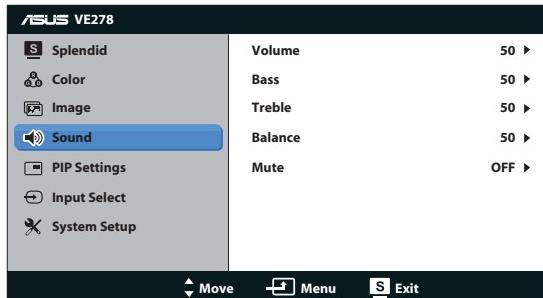
You can adjust the image Sharpness, Trace Free, Aspect Control, Position (VGA only), and Focus (VGA only) from this main function.



- **Sharpness:** Adjusts the picture sharpness. The adjusting range is from 0 to 100.
- **Trace Free:** Speeds up the response time by Over Drive technology. The adjusting range is from lower 0 to faster 100.
- **Aspect Control:** Adjusts the aspect ratio to "Full", "4:3", "1:1", or "Over Scan" (Only available for HDMI input).
- **ASCR:** Select YES or NO to enable or disable dynamic contrast ratio function.
- **Position:** Adjusts the horizontal position (H-Position) and the vertical position (V-Position) of the image. The adjusting range is from 0 to 100 (Only available for VGA input).
- **Focus:** Reduces Horizontal-line noise and Vertical-line noise of the image by adjusting (Phase) and (Clock) separately. The adjusting range is from 0 to 100 (Only available for VGA input).

### 4. Sound

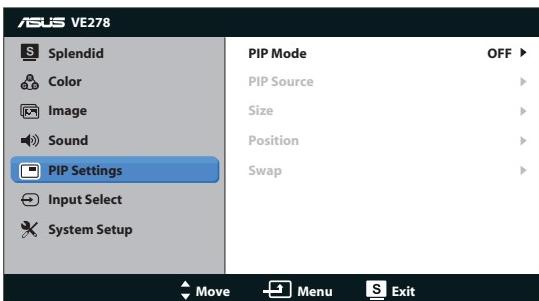
Adjusts the sound settings to your preference.



- **Volume:** Adjusts the output volume level. The  button is also a hot key to activate this function.
- **Bass:** Adjusts the output bass level.
- **Treble:** Adjusts the output treble level.
- **Balance:** Adjusts the balance between the left and right front speakers.
- **Mute:** Mutes the output volume.

## 5. PIP Settings

The PIP Settings allows you to open up another sub-window connected from another video source besides the main-window from your original video source. By activating this function, you can have two pictures from two different video sources displayed by one monitor.



- **PIP Mode:** Turns the PIP function on or off.
- **PIP Source:** Selects the video input source from VGA, DVI, HDMI, or DisplayPort connector.
- **Size:** Adjusts the PIP size. The options are: Small, Middle, or Large.
- **Position:** Adjusts the PIP position in the main-window. The options are: Right-Top, Left-Top, Right-Bottom, or Left-Bottom.
- **SWAP:** Swaps the source of the main and sub-window.




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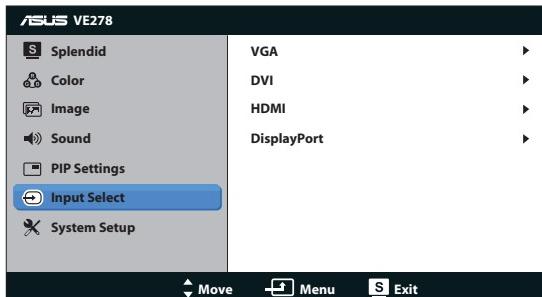
Both the DVI and HDMI input sources should not be selected each for the Main and PIP source simultaneously.

---

|             |             | Main-Channel |     |      |             |
|-------------|-------------|--------------|-----|------|-------------|
|             |             | VGA          | DVI | HDMI | DisplayPort |
| Sub-Channel | VGA         |              | •   | •    | •           |
|             | DVI         | •            |     | X    | •           |
|             | HDMI        | •            | X   |      | •           |
|             | DisplayPort | •            | •   | •    |             |

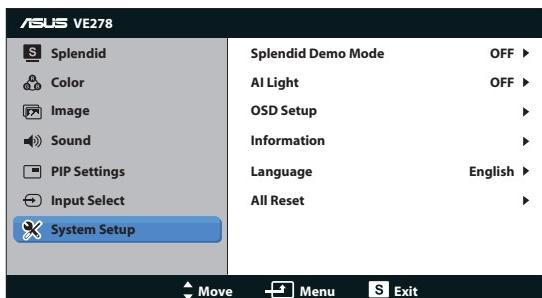
## 6. Input Select

Select the input source from **VGA**, **DVI**, **HDMI**, or **DisplayPort**.



## 7. System Setup

Adjusts the system configuration.



- **Splendid Demo Mode:** Activate the demo mode for the Splendid function.
- **AI Light:** Automatically adjust the screen backlight according to the surroundings. The monitor backlight will turn brighter in a bright surroundings, or turn darker in a dark surroundings. As the light sensor is located on the top of the monitor, do not block the sensing area.
- **OSD Setup:** Adjusts the horizontal position (H-Position), vertical position (V-Position), OSD Timeout, DDD/CI, and Transparency of the OSD screen.
- **Information:** Displays the monitor information.
- **Language:** Selects OSD language. The selections are English, French, German, Spanish, Italian, Dutch, Russian, Traditional Chinese, Simplified Chinese, and Japanese.
- **All Reset:** Set to "Yes" to revert all settings to the factory default mode.

## 3.2 Specifications

| Model                           | VE278Q                | VK278Q                |
|---------------------------------|-----------------------|-----------------------|
| Panel Size                      | 27.0" W (68.6cm)      | 27.0" W (68.6cm)      |
| Max. Resolution                 | 1920x1080             | 1920x1080             |
| Brightness (Typ.)               | 300cd/m <sup>2</sup>  | 300cd/m <sup>2</sup>  |
| Intrinsic Contrast Ratio (Typ.) | 1000:1                | 1000:1                |
| Viewing Angle (CR=10)           | 160°(V) /170°(H)      | 160°(V) /170°(H)      |
| Display Colors                  | 16.7 M(6bit Hi FRC)   | 16.7 M(6bit Hi FRC)   |
| Response Time                   | 2ms (Gray to Gray)    | 2ms (Gray to Gray)    |
| Webcam (built-in)               | -                     | 2.0M                  |
| Satellite Speaker               | 3W x 2 stereo         | 3W x 2 stereo         |
| Earphone Output                 | Yes                   | Yes                   |
| Sound from HDMI                 | Yes                   | Yes                   |
| HDMI input                      | Yes                   | Yes                   |
| DVI input                       | DVI with HDCP         | DVI with HDCP         |
| D-Sub input                     | Yes                   | Yes                   |
| DisplayPort input               | Yes                   | Yes                   |
| Audio Line-in                   | Yes                   | Yes                   |
| Power ON Consumption            | 45W                   | 45W                   |
| Tilt                            | -5° ~ +20°            | -5° ~ +20°            |
| VESA Wall Mounting              | Yes (100mm x 100mm)   | Yes (100mm x 100mm)   |
| Phys. Dimension (WxHxD)         | 643x445.6x220         | 643x459.6x220         |
| Box Dimension (WxHxD)           | 732x560x176           | 732x560x176           |
| Net Weight (Esti.)              | 6.5 kg                | 6.5 kg                |
| Gross Weight (Esti.)            | 9.8 kg                | 9.8 kg                |
| Voltage Rating                  | AC 100-240V(Built-in) | AC 100-240V(Built-in) |

\*Specifications are subject to change without notice.

### 3.3 Troubleshooting (FAQ)

| Problem  | Possible Solution  |
|--|--|
| Power LED is not ON  | <ul style="list-style-type: none"><li>Press the  button to check if the monitor is in the ON mode.</li><li>Check if the power cord is properly connected to the monitor and the power outlet.</li></ul>   |
| The power LED lights amber and there is no screen image        | <ul style="list-style-type: none"><li>Check if the monitor and the computer are in the ON mode.</li><li>Make sure the signal cable is properly connected the monitor and the computer.</li><li>Inspect the signal cable and make sure none of the pins are bent.</li><li>Connect the computer with another available monitor to check if the computer is properly working.</li></ul> |
| Screen image is too light or dark                              | <ul style="list-style-type: none"><li>Adjust the Contrast and Brightness settings via OSD.</li></ul>   |
| Screen image is not centered or sized properly                 | <ul style="list-style-type: none"><li>Press the  button for two seconds to automatically adjust the image.</li><li>Adjust the H-Position or V-Position settings via OSD.</li></ul>  |
| Screen image bounces or a wave pattern is present in the image | <ul style="list-style-type: none"><li>Make sure the signal cable is properly connected to the monitor and the computer.</li><li>Move electrical devices that may cause electrical interference.</li></ul>  |
| Screen image has color defects (white does not look white)     | <ul style="list-style-type: none"><li>Inspect the signal cable and make sure that none of the pins are bent.</li><li>Perform Reset via OSD.</li><li>Adjust the R/G/B color settings or select the Color Temperature via OSD.</li></ul>   |
| Screen image is blurry or fuzzy                                | <ul style="list-style-type: none"><li>Press the  button for two seconds to automatically adjust the image (for VGA mode only).</li><li>Adjust the Phase and Clock settings via OSD.</li></ul>   |
| No sound or sound is low                                       | <ul style="list-style-type: none"><li>Ensure that the audio cable is properly connected to the monitor and the computer.</li><li>Adjust the volume settings of both your monitor and computer.</li><li>Ensure that the computer sound card driver is properly installed and activated.</li></ul>   |
| Webcam is not working (for VK278Q only)                        | <ul style="list-style-type: none"><li>Make sure that you have connected the USB 2.0 cable securely to both the LED monitor and your computer.</li><li>Make sure that you use the Microsoft Windows Vista/XP Service Pack 2 operation systems.</li></ul>  |

## 3.4 Supported Timing List

### PC Supported Primary Timing

| Mode   | Input Aspect Ratio | Resolution      | H(KHz)    | V(Hz)  | Pixel (MHz) |
|--------|--------------------|-----------------|-----------|--------|-------------|
| VGA    | 4:3                | 640x480, 60Hz   | 31.469    | 59.94  | 25.175      |
|        |                    | 640x480, 72Hz   | 37.861    | 72.809 | 31.5        |
|        |                    | 640x480, 75Hz   | 37.5      | 75     | 31.5        |
|        |                    | 640x480, 85Hz   | 43.269    | 85.008 | 36          |
| SVGA   | 4:3                | 800x600, 56Hz   | 35.156    | 56.25  | 36          |
|        |                    | 800x600, 60Hz   | 37.879    | 60.317 | 40          |
|        |                    | 800x600, 72Hz   | 48.077    | 72.188 | 50          |
|        |                    | 800x600, 75Hz   | 46.875    | 75     | 49.5        |
|        |                    | 800x600, 85Hz   | 53.674    | 85.061 | 56.25       |
| XGA    | 4:3                | 1024x768, 60Hz  | 48.363    | 60.004 | 65          |
|        |                    | 1024x768, 70Hz  | 56.476    | 70.069 | 75          |
|        |                    | 1024x768, 75Hz  | 60.023    | 75.029 | 78.75       |
|        |                    | 1024x768, 85Hz  | 68.677    | 84.997 | 94.5        |
| SXGA   | 4:3                | 1152x864, 75Hz  | 67.5      | 75     | 108         |
|        |                    | 1280x960, 60Hz  | 60        | 60     | 108         |
|        | 5:4                | 1280x1024, 60Hz | 63.981    | 60.02  | 108         |
|        |                    | 1280x1024, 75Hz | 79.976, P | 75.025 | 135         |
| WXGA+  | 16:10              | 1440x900, 60Hz  | 55.935    | 59.887 | 106.5       |
|        |                    | 1440x900, 75Hz  | 70.635    | 79.984 | 136.75      |
| WSXGA+ | 16:10              | 1680x1050, 60Hz | 65.29     | 59.954 | 146.25      |
| 1080P  | 16:9               | 1920x1080, 60Hz | 67.5      | 60     | 148.5       |

### IBM Modes, Factory Preset Timing(D-SUB, DVI-D, HDMI inputs)

| Mode | Input Aspect Ratio | Resolution    | H(KHz) | V(Hz)  | Pixel (MHz) |
|------|--------------------|---------------|--------|--------|-------------|
| DOS  |                    | 640x350, 70Hz | 31.469 | 70.087 | 25.175      |
|      |                    | 640x350, 85Hz | 37.861 | 85.08  | 31.5        |
| DOS  |                    | 720x400, 70Hz | 31.469 | 70.087 | 28.322      |
|      |                    | 720x400, 85Hz | 37.927 | 85.039 | 35.5        |

### MAC Modes, Factory Preset Timing(D-SUB, DVI-D, HDMI inputs)

| Mode | Input Aspect Ratio | Resolution    | H(KHz) | V(Hz)  | Pixel (MHz) |
|------|--------------------|---------------|--------|--------|-------------|
| VGA  | 4:3                | 640x480, 67Hz | 35     | 66.667 | 30.24       |
| SVGA | 4:3                | 832x624, 75Hz | 49.725 | 74.551 | 57.2832     |

| VESA Modes, User Available Timing |                    |                     |        |        |             |
|-----------------------------------|--------------------|---------------------|--------|--------|-------------|
| Mode                              | Input Aspect Ratio | Resolution          | H(KHz) | V(Hz)  | Pixel (MHz) |
| 720P                              | 16:9               | 1280x720, 60Hz(RB)  | 44.444 | 59.979 | 64          |
|                                   | 16:9               | 1280x720, 60Hz      | 44.772 | 59.855 | 74.5        |
|                                   | 16:9               | 1280x720, 75Hz      | 56.456 | 74.777 | 95.75       |
| WXGA                              |                    | 1280x768, 60Hz(RB)  | 47.396 | 59.995 | 68.25       |
|                                   | 16:10              | 1280x800, 60Hz(RB)  | 49.306 | 59.91  | 71          |
|                                   | 16:10              | 1280x800, 60Hz      | 49.702 | 59.81  | 83.5        |
|                                   | 16:10              | 1280x800, 75Hz      | 62.795 | 74.934 | 106.5       |
| WSXGA+                            | 16:10              | 1440x900, 60Hz(RB)  | 55.469 | 59.901 | 88.75       |
|                                   | 16:10              | 1440x900, 75Hz      | 70.635 | 79.984 | 136.75      |
| WSXGA+                            |                    | 1680x1050, 60Hz(RB) | 64.674 | 59.883 | 119         |
| 1080P                             | 16:9               | 1920x1080, 60Hz     | 66.587 | 59.934 | 138.5       |

## HDMI Supported Primary Timing

| VESA Modes, Factory Preset Timing |                    |                              |                |            |                |
|-----------------------------------|--------------------|------------------------------|----------------|------------|----------------|
| Mode                              | Input Aspect Ratio | Resolution                   | H(KHz)         | V(Hz)      | Pixel (MHz)    |
| 480i                              | 4:3                | 720(1440)x480i, 59.94 / 60Hz | 15.734 / 15.75 | 59.94 / 60 | 27 / 27.027    |
|                                   | 16:9               | 720(1440)x480i, 59.94 / 60Hz | 15.734 / 15.75 | 59.94 / 60 | 27 / 27.027    |
| 480P                              | 4:3                | 640x480P, 59.94 / 60Hz       | 31.469 / 31.5  | 59.94 / 60 | 25.175 / 25.2  |
|                                   | 4:3                | 720x480P, 59.94 / 60Hz       | 31.469 / 31.5  | 59.94 / 60 | 27 / 27.027    |
|                                   | 16:9               | 720x480P, 59.94 / 60Hz       | 31.469 / 31.5  | 59.94 / 60 | 27 / 27.027    |
| 576i                              | 4:3                | 1440x576i, 50Hz              | 15.625         | 50         | 27             |
|                                   | 16:9               | 1440x576i, 50Hz              | 15.625         | 50         | 27             |
| 576P                              | 4:3                | 720x576P, 50Hz               | 31.25          | 50         | 27             |
|                                   | 16:9               | 720x576P, 50Hz               | 31.25          | 50         | 27             |
| 720P                              | 16:9               | 1280x720P, 50Hz              | 37.5           | 50         | 74.25          |
|                                   | 16:9               | 1280x720P, 59.94 / 60Hz      | 44.955 / 45    | 59.94 / 60 | 74.176 / 74.25 |
| 1080i                             | 16:9               | 1920x1080i, 50Hz             | 28.125         | 50         | 74.25          |
|                                   | 16:9               | 1920x1080i, 59.94 / 60Hz     | 33.716 / 33.75 | 59.94 / 60 | 74.176 / 74.25 |

## HDMI Supported Optional Timing

| Mode  | Input Aspect Ratio | Resolution               | H(KHz)        | V(Hz)      | Pixel (MHz)     |
|-------|--------------------|--------------------------|---------------|------------|-----------------|
| 480P  | 4:3                | 1440x480P, 59.94 / 60Hz  | 31.469 / 31.5 | 59.94 / 60 | 54 / 54.054     |
|       | 16:9               | 1440x480P, 59.94 / 60Hz  | 31.469 / 31.5 | 59.94 / 60 | 54 / 54.054     |
| 576P  | 4:3                | 1440x576P, 50Hz          | 31.25         | 56.25      | 54              |
|       | 16:9               | 1440x576P, 50Hz          | 31.25         | 50         | 54              |
| 1080P | 16:9               | 1920x1080P, 50Hz         | 56.25         | 50         | 148.5           |
|       | 16:9               | 1920x1080P, 59.94 / 60Hz | 67.433 / 67.5 | 59.94 / 60 | 148.352 / 148.5 |

\* The modes not listed in the above tables may not be supported. For optimal resolution, we recommend that you choose a mode listed in the above tables.

